



Sheet #2 (Chapter 2)

1. What header file must be included in programs using cin?
2. Is the variable name Sales the same as sales? Why or why not?
3. TRUE or FALSE: cin requires the user to press the [Enter] key when finished entering data.
4. Describe the difference between a key word and a programmer-defined symbol.
5. Is the following an example of integer division or floating point division? What value will be stored in portion?

int portion = 70/3;

6. Which of the following are illegal variable names, and why?
X , 99bottles , july97 , theSalesFigureForFiscalYear98 , r&d , grade_report

7. Write a program that has the following character variables: first, middle, and last. Store your initials in these variables and then display them on the screen.

8. Write a program that declares an integer variable named age and a float variable named Weight. Store your age and weight, as constants, in the variables. The program should display these values on the screen in a manner similar to the following:

My age is 26 and my weight is 180 pounds.

9. Is the following assignment statement valid or invalid? If it is invalid, why?
72 = amount;

10. How would you consolidate the following declarations into one statement?

int x = 7;

int y = 16;

int z = 28;

11. Write a program that asks the user to enter two numbers, obtains the two numbers from the user and prints the sum, product, difference, and quotient of the two numbers.

12. Write a program that asks the user to enter two integers, obtains the numbers from the user, then prints the larger number followed by the words "is larger." If the numbers are equal, print the message "These numbers are equal."

- 13. Write a program that reads in the radius of a circle and prints the circle's diameter, circumference and area. Use the constant value 3.14159 for PI. Do these calculations in output statements.

14. Write a program that reads an integer and determines and prints whether it is odd or even. (Hint: Use the modulus operator. An even number is a multiple of two. Any multiple of two leaves a remainder of zero when divided by 2.)

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15. Write a program that reads in two integers and determines and prints if the first is a multiple of the second. (Hint: Use the modulus operator.)

16. Write a single C++ statement or line that accomplishes each of the following:

- Print the message "Enter two numbers".
- Assign the product of variables b and c to variable a.
- State that a program performs a sample payroll calculation (i.e., use text that helps to document a program).
- Input three integer values from the keyboard and into integer variables a, b and c.

17. State which of the following are true and which are false. If false, explain your answers.

- C++ operators are evaluated from left to right.
- The following are all valid variable names: `_under_bar_`, `m928134`, `t5`, `j7`, `her_sales`, `his_account_total`, `a`, `b`, `c`, `z`, `z2`.
- The statement `cout << "a = 5;"` is a typical example of an assignment statement.
- A valid C++ arithmetic expression with no parentheses is evaluated from left to right.
- The following are all invalid variable names: `3g`, `87`, `67h2`, `h22`, `2h`.

18. What, if anything, prints when each of the following C++ statements is performed? If nothing prints, then answer "nothing." Assume `x = 2` and `y = 3`.

- `cout << x;`
- `cout << x + x;`
- `cout << "x=";`
- `cout << "x = " << x;`
- `cout << x + y << " = " << y + x;`
- `z = x + y;`
- `cin >> x >> y;`
- `// cout << "x + y = " << x + y;`
- `cout << "\n";`

19. Which of the following C++ statements contain variables whose values are replaced?

- `cin >> b >> c >> d >> e >> f;`
- `p = i + j + k + 7;`
- `cout << "variables whose values are destroyed";`
- `cout << "a = 5";`



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20. Given the algebraic equation $y = ax^3 + 7$, which of the following, if any, are correct C++ statements for this equation?

- a) $y = a * x * x * x + 7;$
- b) $y = a * x * x * (x + 7);$
- c) $y = (a * x) * x * (x + 7);$
- d) $y = (a * x) * x * x + 7;$
- e) $y = a * (x * x * x) + 7;$
- f) $y = a * x * (x * x + 7);$

21. State the order of evaluation of the operators in each of the following C++ statements and show the value of x after each statement is performed.

- a) $x = 7 + 3 * 6 / 2 - 1;$
- b) $x = 2 \% 2 + 2 * 2 - 2 / 2;$
- c) $x = (3 * 9 * (3 + (9 * 3 / (3))));$

22. Write a program that prints the numbers 1 to 4 on the same line with each pair of adjacent numbers separated by one space. Write the program using the following methods:

- a) Using one output statement with one stream insertion operator.
- b) Using one output statement with four stream insertion operators.
- c) Using four output statements.

23. Write a program that inputs three integers from the keyboard and prints the sum, average, product, smallest and largest of these numbers. The screen dialogue should appear as follows:

Input three different integers: 13 27 14

Sum is 54

Average is 18

Product is 4914

Smallest is 13

Largest is 27

24. The following C++ program will not compile because the lines have been mixed up. Find the error:

```
cout << "Success\n";  
cout << " Success\n\n";  
void main(void)  
cout << "Success";  
}  
// It's a mad, mad program  
#include <iostream.h>  
cout << "\nSuccess";  
{
```

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25. What is wrong with the following program?

```
#include <iostream.h>
void main(void)
{
    char letter = "Z";
    cout << letter << endl;
}
```

26. What is wrong with the following program? How would you correct it?

```
#include <iostream.h>
void main(void)
{
    critter = 62.7;
    float critter;
    cout << critter << endl;
}
```

27. Choose the correct answer:

1. Every complete statement ends with a

- ☒ A) period B) # symbol ☒ C) semicolon D) ending brace

2. Which of the following statements is correct?

- A) //include (iostream.h) B) //include {iostream.h}
C) //include <iostream.h> D) //include [iostream.h] ☒ E) All of the above.

3. Every C++ program must have a

- ☒ A) cout statement. ☒ B) function main. C) //include statement.
D) All of the above.

4. Preprocessor directives begin with a

- ☒ A) // B) ! C) < D) * E) None of the above.

5. The following data: 72 'A' "Hello World" 2.8712 are all examples of:

- ☒ A) variables. ☒ B) constants. C) strings. D) none of the above.

6. A group of statements, such as the contents of a function, are enclosed in

- ☒ A) braces {} B) parenthesis () C) brackets [] D) All of the above will do.

7. Which of the following are NOT a valid assignment statements? (Circle all that apply.)

- A) total = 9; B) 72 = amount; ☒ C) profit ° 129 ☒ D) letter = 'W';

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8. Which of the following are not valid cout statements? (Circle all that apply.)
A) cout << "Hello World"; B) cout << "Have a nice day"\n;
C) cout < value; D) cout << Programming is great fun;
9. Assume w = 5, x = 4, y = 8, and z = 2. What value will be stored in result in each of the following statements?
A) result = x + y; B) result = z * 2; C) result = y / x;
D) result = Y - Z; E) result = w % 2;
10. When do preprocessor directives execute?
A) Before the compiler compiles your program. B) After the compiler.
C) At the same time. D) None of the above
28. Assume value is an integer variable. If the user enters 3.14 in response to the following programming statement, what will be stored in value? cin >> value;
A) 3.14 B) 3 C) 0 D) Nothing
29. A program has the following variable declarations:
long miles;
int feet;
float inches;
Write one cin statement that reads a value into each of these variables.
30. The following program will run, but the user will have difficulty understanding what to do. What would you improve the program?
// This program multiplies two numbers and displays the result.
#include <iostream.h>
void main(void)
{
float first, second, product;
cin >> first >> second;
product = first * second;
cout << product;
}

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31. Examine the following program.

```
#include <iostream.h>
void main(void)
{
    char name[21];
    cout << "What is your name? ";
    cin >> name;
    cout << "Hello " << name << endl;
}
```

If Mahmoud runs this program and enters her full name, Mahmoud Fahmy, what will be displayed on the screen? How can the program be improved?

32. Write statements using combined assignment operators to perform the following:

- | | | |
|--|---|--------------------|
| A) Add 6 to x | B) Subtract 4 from amount | C) Multiply y by 4 |
| D) Divide total by 27 | E) Store in x the remainder of x divided by 7 | |
| F) Addy * 5 to x | G) Subtract discount times 4 from total | |
| H) Multiply increase by salesRep times 5 | | |
| I) Divide profit by shares minus 1000 | | |

33. What will the following program display?

```
#include <iostream.h>
void main(void)
{
    int unus, duo, tres;
    unus = duo = tres = 5;
    unus += 4;
    duo *= 2;
    tres -= 4;
    unus /= 3;
    duo += tres;
    cout << unus << endl;
    cout << duo << endl;
    cout << tres << endl;
}
```

34. What will the following program display?

```
#include <iostream.h>
void main(void)
{
    int a=0,b=2,x=4,y=0;
    cout << (a == b) << endl;
    cout << (a != y) << endl;
    cout << (b <= x) << endl;
    cout << (y > a) << endl;
}
```